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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
PATEL, ASHOKKUMAR B

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/073,458	KOO ET AL.	
	Examiner	Art Unit	
	Ashok B. Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2005*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-17 are presented for examination.

Response to Amendment

2. Applicant's arguments filed 07/21/2005 have been fully considered but they are not persuasive for the following reasons:

Applicant's argument:

"Claim 1 recites that the number of repeated code symbols are equal to the number of punctured code symbols; Belaiche does not repeat and puncture so these numbers cannot be equated in any way or manner. For at least the foregoing, Claim 1 cannot be anticipated by Belaiche.

Examiner's Response:

Examiner would like to start stating step by step the teachings of Belaiche relating to limitations of claim 1 with the applicable elements of Fig. 1 as follows:

Belaiche discloses in col. 1, line 47-56, "One of the issues at stake with third-generation mobile radio systems is that of efficiently multiplexing, on the radio interface, services which do not have the same demands in terms of quality of service (Qos). Quality of service is defined, conventionally, according to at least one criterion comprising in particular a processing delay, a bit error rate and/or an error rate per transported block. These different qualities of service require corresponding transport channels having different channel codings and channel interleavings. (Belaiche is clear about:" A method of transmitting information having at least first data and second data in a mobile communication system, comprising the steps of:")

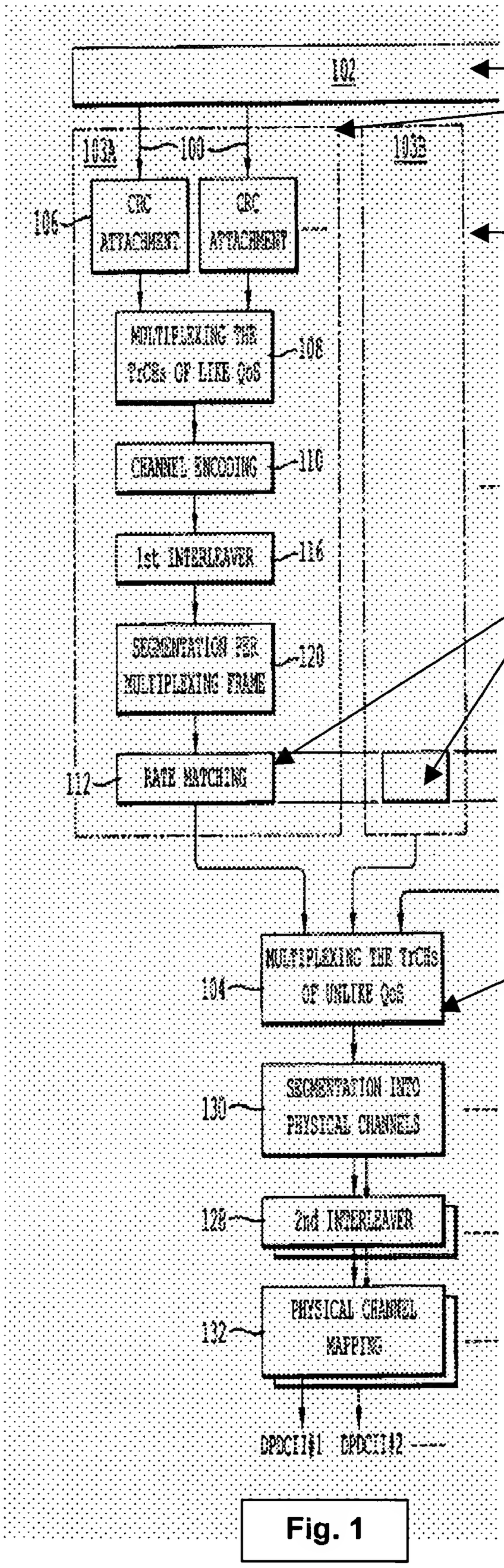

Fig. 1

separating the information into the first data and the second data in the form of a first data stream with a first predetermined length and a second data stream with a second predetermined length, respectively;(col.2, line 41-49," **Each transport channel, labelled 100, periodically receives a transport blocks set from an higher level, labelled 102.** The number of transport blocks 100 in this set, as well as their sizes, depend on the transport channel. The minimum period at which the transport blocks set is supplied corresponds to the time span of the interleaving of the transport channel. **The transport channels with one and the same quality of service (QoS) are processed by one and the same processing chain 103A, 103B. "**

generating first and second code symbol sequences by encoding the first and second data streams at a predetermined code rate; (col. 3, line 49-51," The **objective of the rate matching** step 112 or 114 is to balance the ratio Eb/I **between the transport channels with different qualities of service**." And "col. 4, line 61-62," **"The rate matching, whether dynamic or static, is done either by repetition or by puncturing,"**

repeating one of the first and second code symbol sequences with a higher priority level and puncturing the other code symbol sequence with a lower priority level, the number of repeated code symbols being equal to the number of punctured code symbols; and serially concatenating the repeated code symbol sequence and the punctured code symbol sequence. (col. 5, line 49-53," However, a second interleaver 136 is necessary, **since the multiplexing of the transport channels of different qualities of service QoS is done by straight-forward concatenation, and since such a method would in fact limit the time span of each multiplexed block. " a,d in col. 6, line 25-27,**"T second interleaver 126, 128 is also referred to as an intra-frame interleaver since its time span is that of a multiplexing frame."

Thus, Beliche elucidates that the number of repeated code symbols being equal to the number of punctured code symbols; and serially concatenating the repeated code symbol sequence and the punctured code symbol sequence by element 104.

Applicant's argument:

"Balaiche does not separate a data stream into more than one data stream. Claim 7 recites segmenting the separated data streams according to a data rate; Belaiche does not segment any data. Claim 7 recites encoding the segmented data at a predetermined code rate; Belaiche does not encode segmented data.Claim 7 recites repeating code symbol sequences with higher priority levels, and puncturing code symbol sequences with lower priority levels; as stated above, Belaiche does not repeat and puncture, and any repeating or puncturing is based on an algorithm based on numbers of bits to be processed. Claim 7 recites that the number of repeated code symbols are equal to the number of punctured code symbols; Belaiche does not repeat and puncture so these numbers cannot be equated in any way or manner. For at least the foregoing, Claim 7 cannot be anticipated by Belaiche."

Examiner's response:

Please refer to Fig. 1 above wherein segmentation of the separated data streams is included along with other corresponding limitations as stated above.

Applicant's argument:

"For at least the reasons set forth above with respect to Claim 7, Belaiche cannot render Claim 12 unpatentable."

Examiner's response:

Please refer to Fig. 1 above wherein segmentation of the separated data streams is included along with other corresponding limitations as stated above.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U:S.C. § 102 that form the basis for the rejections under this section made in this Office action'.

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an International application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English Language.

4. Claims 1, 3-7 and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Belaiche (US 6,501,748 B1).

As per claim 1, Belaiche teaches a method of transmitting information having at least first data and second data in a mobile communication system (col. 1, lines 9-25, and lines 64-67., data with disparate QOS), comprising the steps of: separating the information into the first data and the second data in the form of a first data stream with a first predetermined length and a second data stream with a second predetermined length, respectively (col. 2, lines 40-45)., generating first and second code symbol sequences by encoding the first and second data streams at a predetermined code rate (col. 3, lines 30-40)., repeating one of the first and second code symbol sequences with a higher priority level and puncturing the other code symbol sequence with a lower priority level (col. 4, lines 55-60), the number of repeated code symbols being equal to the number of punctured code symbols (col. 3, lines 49-53)*, and serially concatenating the repeated code symbol sequence and the punctured code symbol sequence (col. 5,

lines 49-52).

As per claim 3, Belaiche teaches the method of claim 1, wherein if the information is inter-media data, the data streams are separated by priority level when separating the information (col. 2, lines 47-49).

As per claim 4, Belaiche teaches the method of claim 1, wherein the code symbol sequences are generated in data blocks of lengths determined according to a characteristic of each code symbol sequence and an available data rate on a radio channel (col. 2, lines 13-15*, col. 3, lines 25-40).

As per claim 5, Belaiche teaches the method of claim 4, wherein if the data blocks are less than a data block size available at the data rate, redundancy is added to the data blocks (col. 5, Table 1 , puncturing or repeating done to obtain the required block size).

As per claim 6, Belaiche teaches wherein the redundancy-added data blocks are repeated or punctured including redundancy. (col. 5, Table 1, puncturing or repeating done to obtain the required block size).

As per claim 7, Belaiche teaches a method of simultaneously transmitting data having the same or different priority levels to a mobile station in a mobile communication system, comprising the steps of: classifying transmission data streams by priority level (col. 2, lines 41-49) and separating each transmission data stream into data streams of predetermined lengths according to characteristics of the data streams; segmenting the separated data streams according to a data rate (col. 2, lines 40-45)*, encoding the segmented data at a predetermined code rate (col. 3, lines 30-40), repeating code

symbol sequences with higher priority levels, and puncturing code symbol sequences with lower priority levels (col. 4. lines 55-60), the number of repeated code symbols being equal to the number of punctured code symbols (col. 3, lines 49- 53)., and serially concatenating the repeated and punctured code symbol sequences (col. 5,. lines 49-52).

As per claim 9, Belaiche discloses the method of claim 7, wherein the code symbol sequences are distinguishably generated in data blocks of the size determined according to a characteristic of each stream and an available data rate transmittable on a radio channel (col. 2, lines 13-15,* col. 3, lines 25-40).

As per claim 10, Belaiche discloses the method of claim 7, wherein if the data blocks are shorter than lengths provided by the data rate, redundancy is added to the data blocks (col. 5, Table 1, puncturing or repeating done to obtain the required block size).

As per claim 11, Belaiche teaches wherein the redundancy-added data blocks are repeated or punctured including redundancy. (col. 5, Table 1, puncturing or repeating done to obtain the required block size).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belaiche (US 6,501,748 B1) as applied to claims 1 and 7 above, in view of Andersen et al. (US 5,674,003, "Andersen").

As per claims 2 and 8, Belaiche does not teach wherein the separating step further comprises the steps of: determining whether the information is intra-media data; and separating the information into at least two data streams by priority level if the information is intra-media data.

Andersen teaches designating data packets of intra-media data to indicate the required QOS of diverse data including a priority level (col. 9, lines 5-45., col. 15, lines 54-65,. different priority streams. assigned different sockets).

It would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Andersen and Belaiche to detect intra-media data and to separate the data by priority because they both deal with providing different quality of service levels to transmitted data. Furthermore, the teaching of

Andersen to separate intra-media data by priority allows preserving bandwidth in limited bandwidth situations for the highest priority data thus providing an efficient allocation of resources (See Andersen col. 3', lines 26-35).

7. Claims 12-15 and 17 are rejected under 35 U.S.C. 1Q3(a) as being unpatentable over Belaiche (US 6,501,748 B1) in view of Davis et al. (US 6,781,971 B1, "Davis").

As per claim 12, Belaiche teaches an apparatus for simultaneously transmitting data with the same or different priority levels in a mobile communication system, comprising: separating data into streams based on priority (col. 2, lines 41-49) and separating each transmission data stream into data streams of predetermined lengths according to characteristics and a data rate of the data streams (col. 2, lines 40-45)., a multiplexer (MUX) for segmenting the separated data streams according to the data rate; a plurality of multiple quality control (MQC) channels (col. 2, lines 20-25) for encoding the segmented data at a predetermined code rate (col. 3, lines 30-40), repeating code symbol sequences with higher priority levels, and puncturing code symbol sequences with lower priority levels (col. 4, lines 55-60), the number of repeated code symbols being equal to the number of punctured code symbols (col. 3, lines 49-53)., and a serial concatenator for serially concatenating the repeated and punctured code symbol sequences (col. 5, lines 49-52).

Belaiche does not explicitly teach a radio link protocol portion (RLP) for classifying streams by priority.

Davis teaches a radio link protocol portion for classifying data into streams by priority (col. 11 , line 35 - col. 12, line 5).

It would have been obvious to one of ordinary skill in this ad at the time the invention was made to combine the teaching of Davis and Belaiche because they both deal with prioritizing diverse data streams communicated over a mobile network. Furthermore, the teaching of Davis to modify the system of Belaiche to classify the data in an RLP would reduce the degradation of traffic that cannot tolerate delay by designating such traffic as high priority in order to provide additional transmission resources for such data (See Davis, col. 4, line 60 - col. 5, line 14).

As per claim 13, Belaiche teaches the apparatus of claim 12, wherein each of the MQC channels comprises: a channel encoder 110 (Fig. 1) for encoding the segmented data at the predetermined code rate; and a quality matcher 112 (Fig. 2) for repeating the code symbol sequences with the higher priority levels and puncturing the code symbol sequences with the lower priority levels (col. 4, lines 55-60).

As per claim 14, Belaiche teaches the apparatus of claim 13, wherein the code symbol sequences are generated in data blocks of lengths determined according to a characteristic of each code symbol sequence and an available data rate on a radio channel (col. 2, lines 13-15-, col. 3, lines 25-40).

As per claim 15, Belaiche teaches the apparatus of claim 14, further comprising a redundancy selector in each MQC channel, for adding redundancy to the data blocks if the data blocks are shorter than lengths provided by the data rate (col. 5, Table 1, puncturing or repeating done to obtain the required block size).

As per claim 17, Belaiche teaches the apparatus of claim 12, further comprising a data rate control unit for determining the data rate based on the data rate information

received from a mobile station and then providing the determined data rate with the radio link protocol. (col. 1, line 47-63).

8. Claim 16 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Belaiche and Davis, as applied to claim 13, further in view of Berrou, C. et al., Near Shannon limit error-correcting coding and decoding: Turbo codes IEEE international Conference on Communications, Volume 2, 23-26 May 1993 Pages): 1064 - 1070 vol.2. (hereinafter Berrou).

As per claim 16, Belaiche teaches channel encoders (col. 3, lines 25-26) but does not explicitly teach that the channel encoders are turbo encoders.

Berrou teaches the use of turbo encoders (page 1069, last paragraph).

It would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Belaiche and Berrou to encode the data stream in a channel using a turbo encoder because they both deal with adding redundancy to a data stream to achieve a targeted bit error rate (BER). Furthermore, the teaching of Berrou to use turbo encoding would optimize performance by with respect to correcting data in the face of noise interference at nearly theoretical limits thus optimizing the efficiency of transmission in the face of noise and competing encoded traffic (See Berrou page 1064, Abstract).

Conclusion

Examiner's note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are

applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (571) 272-3972. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A. Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abp
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